

TSURKAN, T. A., inzh.; SHVARTS, V. M., inzh.

Drying unit with a capacity of 80 tons per hour for drying
industrial products. Obog. i brik. ugl. no. 24:32-37 '62.
(MIRA 15:10)

(Karaganda Basin—Coal preparation plants—Equipment
and supplies)
(Drying apparatus)

POZIN, A.A., kand.tekhn.nauk; TSURKAN, V.P., inzh.

Dimension conformity of rubber galoshes and boots to leather
footwear. Kozh.-obuv.prom. 4 no.1:18-19 Ja '62. (MIRA 15:3)
(Boots and shoes, Rubber) (Shoe manufacture)

$$EPP(a)/EPR/EWP(b)/EWT(m)/EWP(b)/T/EWA(d)/EWP(w)/EWP(t) \quad PC-L/Pr-L/PS-L$$

ACROSSING NO. ATSC1001

AUTHOR: Tsurkan, V. P., Engineer

polymer and steel.

materials for railroad transportation.

antifriction polymer

pulse kinetics, sealing, cellular

ABSTRACT: Using measuring instruments constructed in accordance with the diagram shown in Fig. 1, the author determined numerical values of the total accumulated potential of the trigger-coupled polymer-metal system from the motion-picture film. Charge pulses (lasting 0.1-0.01 sec) formed in the reaction zone of the couple were

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L 22200-65

ACCESSION NR: AT5001361

studied by means of the circuits shown in Figs. 3a and 3b of the Enclosure. An oscillogram of instantaneous discharge-charge pulses for the same friction couple is shown. The amplitude of the discharge-charge pulses was found to change with time, and was different for each friction couple. A relationship was noted between the nature of the pulses in the contact zone and the total potential of the couple. Orig. art. has: 5 figures and 3 formulas.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodoro-
zhnogo transporta, Moscow (All-Union Scientific Research Institute for Railroad
Transportation)

SUBMITTED: 00

ENCL: 02

SUB CODE: EE, MT

NO REF SOV: 000

OTHER: 000

Card 2/4

TSURKAN, V.P., inzh.

Methods for studying the electric charges originating during the friction between polymers and steel. Trudy TSNII MPS no.283:124-126 '64.

Triboelectricity in the friction between plastics and metals.
(MIRA 18:4)
Ibid.:127-137

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001757210015-2

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001757210015-2"

potentials in excess of 100 V. It was found that the period of
is affected by a preliminary treatment of the material. The period of
at the time of the first treatment is 1.5 times longer than the period of the
second treatment.

of the bearing was accelerated. The triboelectric potential displayed a rapid drop. Orig. art. has: 9 figures,
6 formulas, and 1 table.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo
transporta, Moscow (All-Union Scientific Research Institute for Railroad
Transportation)

SUBMITTED: 00

ENCL: 00

SUB CODE: MT, EM

NO REF SCV: 009

OTHER: 023

Card 2/2

TSURKAN, V.P., inzh.; ZYBIN, Yu.P., doktor tekhn.nauk, prof.

Height of boot tops. Izv.vys.ucheb.zav.; tekhn.prom. no.3:
114-118 '60. (MIRA 13:8)

1. Moskovskiy tekhnologicheskii institut legkoy promyshlennosti.
(Boots and shoes--Specifications)

TSURKANENKO, N.

Solid support. Sov.shakht. 10 no.6:29 Je '61. (MIRA 14:9)

1. Predsedatel' Sralinskogo raykoma profsoyuzov (Donbass).
(Trade unions) (Coal mines and mining)

TSURKANU, P.Ya.

Work of a consolidated feldsher-midwife center. Zdravookhranenie
3 no.3:52-53 My-Je '60. (MIRA 13:7)

1. Zaveduyushchiy fel'dshersko-akusherskim punktom sela Varva-
rovka Floreshtshkogo rayona.
(VARVAROVKA--HOSPITALS, RURAL)

TSURKAVA, G.

For the freedom island. Prof.-tekh. obr. 20 no.12:22 D '63.
(MIRA 17:1)

TAVADZE, F.N.; NIKOLAYEV, O.B.; NABICHVRISHVILI, M.A.; TSURKAVA, G.A.

Increasing the durability of molds by means of cast steel
bands. Trudy Inst.met. AN Gruz.SSR 9:107-116 '58.
(MIRA 12:8)

(Molding (Founding))

TSURKIN, G.

About new books. ("In the world of radio." F. Chestnov. Reviewed
by G. Tsurkin). Tekh. mol. 23 no.5:14 My '55. (MLRA 8:6)
(Chestnov, F.I.) (Radio)

TSURKIN, G.

New electric trains. Tekh. mol. 23 no.6:14 Je '55. (MLRA 8:9)
(Electric railroads)

~~TSURKO, V. P.~~; LARYN, V., redaktor; RABINOVICH, A., redaktor; STSEPAN VA, N.,
tekhnicheskii redaktor

[Cultivation of fiber flax on peat bog soils] Vyroshchvanne il'nu-
dauhuntsu na tarfiانا-balotnykh hlebakh. Minsk, Dziarzh. vyd-va
BSSR, 1956. 64 p. (MLRA 10:9)
(Flax) (Peat soils)

KARAKULOV, A.S., Arch.; KHALAKOV, G.K., Arch.; TSUREKOV, B.A., Arch.

Production of trunked plate forgings for steel-pouring ladles.
Mashinostroenie no.1104 Jan '65. (MIRA 1965)

TSURKOV, I. S.

USSR/Engineering - Mechanics

Feb 51

"Elastic Stressed State of an Arbitrarily Loaded
Closed Cylindrical Shell," I. S. Tsurkov, Inst Mech,
Acad Sci USSR

"Iz Ak Nauk, Otdel Tekh Nauk" No 2, pp 169-193

Presents results of integrating differential eqs
by well-known methods of initial parameters,
which permit considerable simplification of prob-
lem. Complete symmetrically constructed syst of
differential eqs, suggested by V. Z. Vlasov, is
taken as basis. Significance of eqs of the
theory of shallow shells for soln of this gen

185T38

USSR/Engineering - Mechanics (Contd) Feb 51

problem also shown. Method may be used, e.g.,
in designing pipelines, permitting decrease
of safety factor, thus leading to considerable
saving of metal. Submitted by Acad B. N.
Yur'yev.

185T38

Mathematical Review
Vol. 14 No. 10
Nov. 1953
Mechanics

Stenany, R. D., and Curkov, I. S. The computation of a cylindrical shell reinforced by a ring. Akad. Nauk SSSR. Inzhenernyi Sbornik 12, 77-94 (1952). (Russian)
The authors consider a closed cylindrical shell fixed at one end and reinforced by a ring at the other one. The ring is made from a thin-walled rod with arbitrary rectangular cross-section, although the illustration shows a channel cross-section. The shell and the ring are under the action of arbitrary loads. The problem is solved in the following way: the ring and the shell are separated, and the influence of the shell on the ring is replaced by unknown deformations, and vice versa, the influence of the ring on the shell is replaced by the same unknown deformations. The condition of the continuity of deformations at the surface of contact requires that these deformations must be equal for the ring and for the shell. The authors write the differential equations of equilibrium for the ring and for the shell and the comparison of deformations at the surface of contact leads to a system of algebraic equations in four unknowns. The authors do not solve these equations, most of the operations are only indicated, but an outline of a procedure for numerical computations is sufficiently well presented. The solution of this problem is based on V. Z. Vlasov's theory of shells and the authors refer often to the following of his works: General theory of shells and its applications in technology, Gostehizdat, Moscow-Leningrad, 1949 [these Rev. 11, 627]; Thin walled elastic rods, Gosstrolizdat, Moscow, 1940; Izvestiya Akad. Nauk SSSR. Otd. Tehn. Nauk 1949, 819-836 [these Rev. 11, 288]. T. Leser.

Name: TSURKOV, Ivan Sergeyevich

Dissertation: Elastoplastic Equilibrium of Shells

Degree: Doc Tech Sci

Affiliation: [Not indicated]

Defense Date, Place: 21 Jun 56, Council of Inst of Mechanics, Acad Sci USSR

Certification Date: 13 Oct 56

Source: FMVO 6/57

TSURKOV, I. S.

Tsurkov, I. S.

"Elastic-plastic equilibrium of membranes." Acad Sci USSR. Inst of Mechanics.
Moscow, 1956. (Dissertation for the Degree of Doctor in Technical Sciences.)

So: Knizhnaya letopis'
No. 25, 1956. Moscow

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001757210015-2

Turkey, L.S.

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001757210015-2"

AUTHOR: Tsurkov, I. S. (Moscow).

24-6-23/24

TITLE: Elastic-plastic equilibrium of shallow shells in the case of small deformations. (Uprugo-plasticheskoye ravnovesiye pologikh obolochek pri malykh deformatsiyakh).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac, Sc., Technical Sciences Section), 1957, No.6, pp.139-142 (U.S.S.R.)

ABSTRACT: By applying the equilibrium equations and the geometrical relations of the theory of shallow shells (Vlasov, V.Z. "General theory of shells", 1949) and also the elasticity and plasticity relations (Il'yushin, A.A. "Plasticity", 1948) it is possible to obtain by the method of elastic solutions a system of differential equations expressed in terms of displacements of the elastic-plastic equilibrium of shallow shells assuming non-compressibility of the material which corresponds to the k-th approximation of the solution of the problem expressed by the differential equations, eq.(1), p.139.

Card 1/2 An approximate solution is arrived at and the results are utilised for calculating an example of elastic-plastic bending of an open shallow, spherical steel shell stressed by a uniformly distributed load q , whereby the shell consists of a slightly curved square plate of a side length a

24-6-23/24

Elastic-plastic equilibrium of shallow shells in the case of small deformations. (Cont.)

and a height of the curvature equalling the thickness of the shell. Figs. 3 to 5 give the graphs of the changes in the sag and the deformation component for approximations up to the 5th one. It is stated that the finally derived formula simplifies considerably solution of the problem. There are 5 figures and 3 references, all of which are Slavic.

SUBMITTED: May 21, 1956.

AVAILABLE:

Card 2/2

Tsurkov, I. S.

AUTHOR: Tsurkov, I. S. (Moscow)

24-12-9/24

TITLE: Elastic-plastic deformations of orthotropic cylindrical shells. (Uprugo-plasticheskiye deformatsii ortotropnykh tsilindricheskikh obolochek).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.12, pp.50-53 (USSR).

ABSTRACT: On the basis of the theory of elastic orthotropic cylindrical shells, a basic system of differential equations is derived, Eqs.(1) and (2), p.50, by utilising the inter-relations between the elasticity and plasticity and the internal stresses and strains; this system of differential equations relates to the elastic-plastic equilibrium of orthotropic cylindrical shells, the material of which is assumed incompressible and corresponding to the k-th approximation of the solution of the problem. Graphs are included which show the change in the sag and the strain components in the zero and subsequent approximations at the points 0 and 0.5l. The magnitude of the sag in the second and subsequent approximations can be calculated by means of the approximate formula, Eq.(26), p.53, and the same relation is also valid for determining the strain components.

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24-12-9/24

· Elastic-plastic deformations of orthotropic cylindrical shells.

There are 4 figures and 2 Slavic references.

SUBMITTED: June 2, 1956.

AVAILABLE: Library of Congress.

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TSURKOV, I.S.

PLATE I BOOK EXPLANATION 807/4331

Abakovsky book 808. Directly identical

Abakovsky book 808. Directly identical. Vol. 26 Moscow, 1954. 288 p. 2,400 copies printed.

Abakovsky book 808. Directly identical with book. Directly identical.

Prof. M. I. A. D. (Leningrad) M. I. G. I. (Moscow) Prof. M. I. B. M. (Leningrad).

PROBLEM: This book is intended for engineers.

CONTENTS: The book contains 29 articles dealing with professional work performed by mechanical engineers such as the calculation of shells, rods, and plates, and the calculation of problems in stress distribution and equilibrium. Oscillations of shells, plates, and beams, stability of rods, plates, and other members, stress distribution, and bending are discussed. Oscillations of aircraft wings are studied. References accompany each article.

Author, I. S. (Moscow). Concerning the question of Elastic Equilibrium of a Rectangular Plate in a Bending Shell with Rod Inclusions [inserted on 1/6/1958]

Author, I. S. (Moscow). Deformation of a Free Cylindrical Shell under Impact [inserted on 5/8/1958]

Author, I. S. (Moscow). Concerning the Calculation of Shallow Cylindrical Bowed Shells [inserted on 1/6/1958]

Author, I. S. (Moscow). Concerning the Calculation of Certain Parts of a Three-Dimensional Component [inserted on 10/27/1955]

Author, I. S. (Moscow). Mutual Oscillations of Rectangular Shells of Two Types [inserted on 6/12/1958]

Author, I. S. (Moscow). Two Simple Problems in Elastic Equilibrium with Large Displacements [inserted on 9/14/1955]

Author, I. S. (Moscow). Concerning the Calculation of Elastic Cylindrical Shells under Torsion in Individual Points [inserted on 12/10/1956]

Author, I. S. (Moscow). Certain Qualitative or Fundamental Data Functions [inserted on 3/15/1958]

Author, I. S. (Moscow). Experimental Testing of Performance of an Orthotropic Cylindrical Shell Reinforced by a Ring [inserted on 4/24/1958]

Author, I. S. (Moscow). Elastic Equilibrium of Shells of Revolution [inserted on 11/20/1958]

Author, I. S. (Moscow). Approximate Solution of a Problem Relating to the Elastic Equilibrium of a Shell under a Load Applied to an Elastic Annular Segment [inserted on 6/12/58]

Author, I. S. (Moscow). Elastic Equilibrium of a Cylindrically Anisotropic Shell under a Load Uniformly Distributed Longitudinally [inserted on 12/14/1955]

Author, I. S. (Moscow). Stability of Rods and Plates beyond the Elasticity Limit [inserted on 3/2/1958]

Author, I. S. (Moscow). Stress Concentration under Simple Bending in an Orthotropic Plate Reinforced by a Circular Rod [inserted on 2/20/1956]

End 4/6

TSURKOV, I.S. (Moskva)

Bending of a closed cylindrical shell by a concentrated
force. Inzh.sbor. 27:114-123 '60. (MIRA 13:6)
(Elastic plates and shells)

TSURKOV, I. S. (Moskva) ,

Elastic plastic deformations of a thin-walled cylinder near the
stiffness ring. Inzh. sbor. 28:182-189 '60. (MIRA 13:10)
(Deformations (Mechanics))

L 06379-67 EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(k) IJP(c) WW/EM
ACC NR: AT6025457 SOURCE CODE: UR/3065/65/000/047/0017/0023

AUTHOR: Tsurkov, I. S.

ORG: None

TITLE: Determining the rigidities of an elastoplastic shell

SOURCE: Moscow. Inzhenerno-stroitel'nyy institut. Sbornik trudov, no. 47, 1965.
Issledovaniya po teorii sterzhney, plastinok i obolochek (Studies on the theory of
rods, plates, and shells), 17-23

TOPIC TAGS: shell theory, elastic deformation, plastic deformation

ABSTRACT: The author derives analytical expressions for calculating the rigidities

$$I_1 = \int_{-\frac{h}{2}}^{\frac{h}{2}} \frac{\sigma_1}{\epsilon_1} dz; \quad I_2 = \int_{-\frac{h}{2}}^{\frac{h}{2}} \frac{\sigma_1}{\epsilon_1} z dz; \quad I_3 = \int_{-\frac{h}{2}}^{\frac{h}{2}} \frac{\sigma_1}{\epsilon_1} z^2 dz$$

of an elastoplastic shell as functions of the deformations of the middle surface and
the law relating the intensity of the stresses σ_i to the intensity of the deformations

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ACC NR: AT6025457

ϵ_i where h is the thickness of the shell and z is the coordinate along the normal to the middle surface. The final expressions are given in the form

$$I_1 = \frac{h}{\mu_1 + \mu_2} B_0;$$

$$I_2 = \frac{h^2}{(\mu_1 + \mu_2)^2} \left[A_0 - \frac{1}{2} (\mu_2 - \mu_1) B_0 \right];$$

$$I_3 = \frac{h^3}{(\mu_1 + \mu_2)^3} \left[C_0 + \frac{1}{4} (\mu_2 - \mu_1)^2 B_0 - (\mu_2 - \mu_1) A_0 \right]$$

where

$$A_0 = E(1-\lambda) \frac{\epsilon_{i2}^2 - \epsilon_{i1}^2}{2} + \lambda E \epsilon_s (\epsilon_{i2} - \epsilon_{i1});$$

$$B_0 = E(1-\lambda)(\mu_1 + \mu_2) + 2E\lambda\mu_0 + E\lambda\epsilon_s \ln \Omega;$$

$$C_0 = \frac{E(1-\lambda)}{3} (\mu_1^3 + \mu_2^3) + \frac{2}{3} E\lambda\mu_0^3 +$$

$$+ \frac{\lambda E \epsilon_s}{2} (\epsilon_{i1}\mu_1 + \epsilon_{i2}\mu_2 - 2\epsilon_s\mu_0 - \epsilon_{i0}^2 \ln \Omega);$$

$$\mu_1 = \sqrt{\epsilon_{i1}^2 - \epsilon_{i0}^2};$$

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ACC NR: AT6025457

$$\begin{aligned}\mu_2 &= \sqrt{\epsilon_{i_2}^2 - \epsilon_{i_1}^2}; \\ \mu_0 &= \sqrt{\epsilon_s^2 - \epsilon_{i_0}^2}; \\ \Omega &= \frac{(\epsilon_{i_1} + \mu_1)(\epsilon_{i_2} + \mu_2)}{(\epsilon_s + \mu_0)^2}; \\ &(\epsilon_s > \epsilon_{i_0}).\end{aligned}$$

Orig. art. has: 4 figures, 21 formulas.

SUB CODE: 20/. SUBM DATE: None/ ORIG REF: 001

Card 3/3

LEONT'YEV, Nikolay Nikolayevich, kand. tekhn.nauk; TSURKOV, I.S.,
doktor tekhn. nauk, prof., nauchn. red.; BEGAK, B.A.,
red.izd-va; MOCHALINA, Z.S., tekhn. red.

Vasilii Zakharovich Vlasov. Moskva, Gosstroizdat, 1963.
73 p. (MIRA 16:11)
(Vlasov, Vasilii Zakharovich, 1906-1958)
(Roofs, Shell)

TSURKOV, I.S. (Moskva)

Elastic plastic deformations at the clamped edge of a thin-walled
cylinder. Inzh.sbor. 31:93-100 '61. (MIRA 14:6)
(Deformations (Mechanics))

27800

S/508/60/028/000/014/022
D251/D305

24.4200 2607, 1327, 1191,

AUTHOR: Tsurkov, I.S. (Moscow)

TITLE: The elastic-plastic deformation of a thin-walled cylinder near the stiffening ring

PERIODICAL: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk. Inzhenernyy sbornik, v. 28, 1960, 182 - 189

TEXT: The paper deals with the elastic-plastic equilibrium of a long, bottomed, thin-walled, cylinder subjected to a constant pressure. Because the axial forces act down the generator of a cylinder it is impossible to use a solution obtained by A.A. Ilyushin (Ref. 1: 'Plastichnost' (Plasticity) Gostekhizdat, 1948); hence a new solution is necessary. The elastic-plastic equation for a bottomed, smooth cylinder subjected to internal pressure p (Fig.1) is expressed by

$$\frac{d^4 w}{dx^4} + 9 \frac{w}{h^2 R^2} = \frac{9}{Eh^3} (-p + P_z) \quad (1.1)$$

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The elastic-plastic deformation ...

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where w - radial flexure, h - thickness of shell, R - radius of cylinder, E - Young's modulus, x - linear coordinate down the generator. The function P_z expresses elastic-plastic stage of the shell from the following relation

$$P_z = - \frac{\Delta T_2}{R} - \frac{d^2 \Delta M_1}{dx^2}. \quad (1.2)$$

It is assumed that the material in a plastic region is not strengthened; therefore, the relation between the intensity of stresses σ_1 and intensity of deformation e is expressed in

$$\sigma_1 = Ee_s = \sigma_s \quad (1.7)$$

and that between internal forces and the deformation in

$$T_1 = \frac{4}{3} \left[\left(\epsilon_1 + \frac{1}{2} \epsilon_2 \right) I_1 + \frac{1}{2} \epsilon_2 I_2 \right], \quad (1.8)$$

$$T_2 = \frac{4}{3} \left[\left(\epsilon_2 + \frac{1}{2} \epsilon_1 \right) I_1 + \frac{1}{2} \epsilon_1 I_2 \right].$$

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The elastic-plastic deformation ...

$$M = -\frac{4}{3}[(\epsilon_1 + \frac{1}{2}\epsilon_2) I_2 + \kappa I_3]. \quad (1.8)$$

Geometrical relations are stated in

$$\epsilon_2 = -\frac{w}{R}, \quad \kappa = -\frac{d^2 w}{dx^2}. \quad (1.9)$$

Fig. 2 shows the direction of the internal forces and the coordinates. The action of the stiffening ring may be represented by uniformly distributed forces q , acting down the line of contact of the shell and the stiffening ring. When the magnitude of forces q is known, then the elastic stressed stage near the stiffening ring is expressed by

$$N_0 = \frac{1}{2} q_0 \theta(\alpha), \quad M_0 = -\frac{q_0}{4\beta} \Psi(\alpha), \quad (2.4)$$

$$T_{20} = -\frac{1}{2} R\beta q_0 \varphi(\alpha), \quad w_{q_0} = -\frac{R^2 \beta q_0}{2Eh} \varphi(\alpha),$$

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The elastic-plastic deformation ...

$$\begin{aligned}\theta(\alpha) &= e^{-\alpha} \cos \alpha, \quad \zeta(\alpha) = 3^{-\alpha} \sin \alpha, \\ \varphi(\alpha) &= \theta(\alpha) + \zeta(\alpha), \quad \psi(\alpha) = \theta(\alpha) - \zeta(\alpha),\end{aligned}\quad (2.5)$$

and these forces q will increase the radius of the stiffening ring to

$$\delta_k = \frac{qR^2}{E_1 F}, \quad (2.6)$$

where F - cross sectional area of ring, E_1 - Young's modulus of the ring's material. Equations are also given for the internal forces, and the components of the deformation near the stiffening ring. The approximate elongations and the curvature in the first approximation on the line of contact between ring and shell are expressed by

$$\epsilon_{11} = \frac{3}{4} \frac{pR}{Eh} \left[1 - \frac{1}{2} \frac{I_{11}}{Eh} + \frac{2cI_{21}}{Eh^2} - \frac{2}{3} \frac{Eh}{pR} \epsilon_{21} \right], \quad \checkmark \quad (3.9)$$

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The elastic-plastic deformation ...

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$$\epsilon_{21} = \frac{3}{4} \frac{\rho R}{Eh} \left(1 - \frac{2}{3} c \right) \left\{ 1 + \frac{2}{3} \frac{P_{21}(0)}{\rho^2 a_1} [2a_1 - 1 + \psi(a_1)] \right\}, \quad (3.9)$$

$$z_{11} = -\frac{3}{2} \frac{\rho R}{Eh^2} c \left\{ 1 + \frac{2}{3} \frac{P_{21}(0)}{\rho^2 a_1} [2a_1 - 1 + \psi(a_1)] \right\}. \quad (3.10)$$

The solution of the problem may be obtained in a similar manner for the subsequent approximations. Calculations indicate however, that sagging w_1 , and also appropriate elongations and the curve can be determined in further approximations from a simple recurrence formula. Graphs are given to show changes of deformation and changes of its intensity on the line of contact of the stiffening ring and the shell. For plotting of graphs expressions of type

$$w_n = w_{n-1} + (w_1 - w_0) \left(\frac{w_1}{w_0} \right)^{n-1} \quad (3.11)$$

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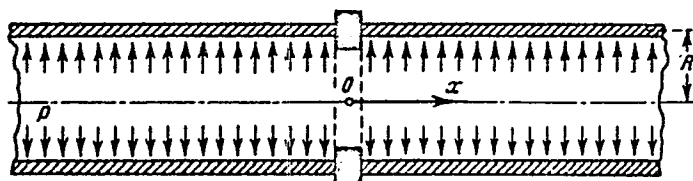
The elastic-plastic deformation ...

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D251/D305

were used. There are 9 figures and 3 Soviet-bloc references.

SUBMITTED: May 29, 1960

Fig. 1.



Фиг. 1

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FRASE I BOOK INFORMATION 807/4000 807/12-4-27

- Ametskya nauk SSSR. Institut matematiki
 Inzhenernyy sbornik, t. 27 (Engineering Collection, Vol. 27) Moscow, Izd-vo
 AN SSSR, 1960. 210 p. 2,000 copies printed.
 Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk.
 Resp. Ed.: A. A. Il'yushin; Ed.: V. M. Akhmedov; Ed. of Publishing House:
 V.M. Akhmedov; Tech. Ed.: A.F. Ouseva.
 PURPOSE: This book is intended for engineers, applied physicists, and ap-
 plied mathematicians.
 COVERAGE: The book consists of 24 articles on such problems as wing theory,
 supersonic flow, theory of shells, stability, rigidity and elasticity,
 bending of thin plates and shells, and time aspects of applied
 mathematics. No periodicals are mentioned. References accompany most of
 the articles.
 Filizov, M.Y. On the Problem of Displacing Gas by Water 54
 Bolotin, V.Y. Application of Statistical Methods for the
 Evaluation of the Strength of Structures Subjected to Stochastic Forces 58
 Murecha, A.A. The Behavior of Complex Eigen Values in the Problem of
 Torsal Flutter 70
 Glubokin, A.M. Stability of an Elastic Beam With Rigid Repegnage in
 Supersonic Flow 77
 Ginzburg, N.M. Vibrations of an Elastic String 81
 Il'yushin, A.A. Elastoplastic Stability of Structures Containing
 Rod Elements 87
 Popov, S.M. Stability of Circular Thin Plates Beyond the Elastic
 Limit 92
 Zabevalov, V.D. Stability of Structural Rods Beyond the
 Elastic Limit 101
 Pustov, I.A. On the Bending of a Closed Cylindrical Shell by
 a Concentrated Force 114
 Sherman, D.I. Strains in a Physical Medium Weakened by Elliptical
 and Circular Holes 124
 Spodolnikov, A.D. Determination of Stresses Caused by Pressing
 Several Circular Washers Into a Plate With Variable Imperfections 157
 Khilko, M. On the Practical Calculation of Bending Moments of
 Shells Supported by a Rectangular Frame 162
 Pukhnichov, G.I. Statistical Calculation of Littered Cylindrical
 Shaping Shells 171
 Volkov, A.N. "Contact Method" in the Coupling of a Cylindrical
 Shell of Open and Closed Profile 179
 Buzdakov, Ye.F. Symmetric Bending of Nonhomogeneous and Homo-
 geneous Elastic Shells of Revolution Taking Into Account Large
 Deflections and an Unwoven Temperature Field 185
 Kuznetsov, E.S. Lower Limit of a Kinetically Maximum Admissible Load
 200
 Levit, D.Ye. Homographic Solution of Equations of the Fourth and
 Fifth Degrees 203
 Dneprov, N.D. Application of the Method of Asymptotic Integration
 to the Solution of One Equation of the Natural Vibrations of Shells 207
 AVAILABLE: Library of Congress

Tsurkov I.S.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics,
Moscow, 27 Jan - 3 Feb '60.

303. G. I. Pans (Moscow): Investigation of the viscoplastic flow of structural systems (laminates, slabs, shells) by the differential method.
304. B. I. Burdakov (Moscow): Experimental investigation of the flow of plasticity in soil layers under foundations of various dimensions.
305. A. A. Shcherbakov (Izrael): On the stability and vibrations of anisotropic plates and shells.
306. A. I. Zhuravskiy (Izrael): On the theory of thick plates.
307. D. G. Zil'berman (Izrael): Some mathematical problems concerning an infinite strip with reinforced edges.
308. A. I. Kuznetsov (Izrael): A general approach to the creep loading theory of laminates and Shcherbakov.
309. A. A. Shcherbakov (Izrael): Solution of the problem of the stability of reinforced concrete beams under combined compression, flexure, and shear.
310. A. I. Zhuravskiy (Izrael): On the non-linear equations of the theory of shells for small elastic deformations and their linearization in the method of elastic solutions.
311. A. A. Shcherbakov (Moscow): The physical foundations of the mechanics of thin shells.
312. L. F. Charnitskiy (Izrael): Saint Venant's problem for laminated composites.
313. A. I. Kuznetsov (Izrael): On some properties of the function of the rate of small elastic-plastic deformations.
314. A. A. Shcherbakov (Izrael): A two-dimensional problem concerning plastic bodies with a reinforced surface.
315. A. A. Shcherbakov (Izrael): On the integration of the equations of the plane problem of plasticity.
316. A. A. Shcherbakov (Izrael): Stability of regular structures and plates.
317. A. A. Shcherbakov (Moscow): On the limit equilibrium of shells of revolution.
318. A. A. Shcherbakov (Moscow): A contribution to the formulation of problems concerning anisotropic plastic solids.
319. A. I. Zhuravskiy (Moscow): Solutions of some three-dimensional problems of plasticity with application to the rolling of metals.
320. A. A. Shcherbakov (Izrael): The solution of some contact problems of elasticity (question of Prandtl type).
321. D. I. Shcherbakov (Moscow): A heavy medium weakened by an elliptical cavity.
322. D. I. Shcherbakov (Moscow): The method of integral equations in static problems of elasticity.
323. A. I. Zhuravskiy (Moscow): Creep of non-uniformly heated bodies.
324. A. I. Zhuravskiy (Moscow): Antisymmetrical motions of a perfectly plastic medium.

TSURKOV, K., inzh., sportsmen 1-go razryada (Odessa)

The KMTS-7 compressed-gas engine. Kryl.rod. 13 no.7:28 J1 '62.
(MIA 16:2)

(Airplanes—Models)

KOMAROV, A., nauchnyy sotrudnik; TSurkov, N., nauchnyy sotrudnik; KRAVCHENKO, V., nauchnyy sotrudnik.

Combined operational technology for rail and maritime transportation.
Mor. flot 19 no.2:13-17 F '59. (MIRA 12:3)

1. Institut kompleksnykh transportnykh problem AN SSSR.
(Transportation)

KOMAROV, A., kandidat tekhnicheskikh nauk; ANTONOV, M., kandidat tekhnicheskikh nauk; TSURKOV, N., inzhener.

Concerted action by both rail and water transportation in mixed transportation systems. Mor.i rech. flot 13 no.3:5-9 Jy '53. (MIRA 6:8)
(Transportation)

TSURKOV, N.S., kand.tekhn.nauk; KHAIMOV, G.Ya., inzh.

Efficiency of special destination trains for the transportation of
petroleum bitumen. Zhel.dor.transp. 45 no.7:49-50 J1 63.

(MIRA 16:9)

(Bitumen—Transportation)
(Railroads—Management)

ANTONOV, M.F., nauchnyy sotrudnik; MOLYARCHUK, G.S., nauchnyy sotrudnik;
TSURKOV, N.S., nauchnyy sotrudnik.

Over-all development of transport junctions is an important potential for increasing the efficiency of combined freight transport.
Rech. transp. 17 no.5:7-10 My '58. (MIRA 11:5)

1. Institut kompleksnykh transportnykh problem.
(Marine railroads) (Harbors)

TSURKOV, N.S.

Coordinating railroad and waterway transportation in points of freight transfer. Rech. transp. 16 no.6:15-18 Je '57. (MLRA 10:8)

1. Nauchnyy sotrudnik Instituta kompleksnykh transportnykh problem Akademii nauk SSSR.
(Inland water transportation) (Railroads--Freight)

TSURKOV, N. S.

Tsurkov, N. S.

"Investigation of the effect of conditions of operating rolling points on the technological wear of their load fronts." Acad Sci USSR. Inst of Complex Transportation Problems. Moscow, 1956. (Dissertation for the Degree of Doctor in Sciences.)

Knizhnaya letopis'
No. 35, 1956. Moscow.

TSURKOV, N.S.

ANTONOV, M.F., nauchnyy sotrudnik; TSURKOV, N.S., nauchnyy sotrudnik.

Potentialities still to be used for speeding up cargo handling in
ports. Rech.transp.14 no.12:19-21 Je '55. (MIRA 9:9)

1. Institut kompleksnykh transportnykh problem Akademii nauk SSSR
(for both).
(Moscow--Cargo handling) (Khabarevsk--Cargo handling)

ACC NR: AP7003848

(N)

SOURCE CODE: UR/0122/67/000/001/0059/0061

AUTHORS: Paisov, I. V. (Doctor of technical sciences, Professor); Bashnin, Yu. A. (Candidate of technical sciences, Docent); Tsurkov, V. N. (Engineer); Maslova, Y. N. (Engineer); Kats, I. Ya. (Engineer); Bocharov, V. A.; Maksyuta, Z. I.

ORG: none

TITLE: Improving the mechanical properties of large forgings by changing the heat treatment parameters

SOURCE: Vestnik mashinostroyeniya, no. 1, 1967, 59-61

TOPIC TAGS: steel forging, metal heat treatment, steel, steel property / 50KhN steel, 60KhN steel, 55Kh steel, 60KhG steel

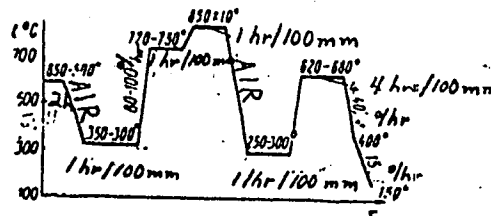
ABSTRACT: Factory tests on 32-ton, 1300-mm diameter forgings of 60KhN steel showed that the prescribed factory heat treatment for large forgings of 50KhN, 60KhN, 55Kh, and 60KhG steels gave mechanical properties which were below the norm ($\sigma_T = 50.0 \text{ kg/mm}^2$, $\sigma_b = 80.0 \text{ kg/mm}^2$, $\delta = 8.0\%$, $\psi = 33.0\%$, $a_n = 3.0 \text{ kgm/cm}^2$ is the norm). The factory heat treatment (see Fig. 1) was modified by the authors who replaced the isothermal heating at 720C by heating to 950C for 2-3 hours with subsequent cooling to 860C and holding at that temperature for 1 hr/100-mm cross section. Thermocouples were embedded in the test forgings at 50 mm, at 1/3 R from the surface, and at the center. It was

Card 1/2

UDC: 621.78:621.73.002.23

ACC NR: AP7003848

Fig. 1. Factory heat treatment of large forgings



found that the modified heat treatment gave more desirable temperature profiles and resulted in improved mechanical properties (except for the impact strength) of the forgings. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 13/ SUBM DATE: none

Card 2/2

TSURKOVA, L. N.

Cases of abnormal development of the uterus and vagina complicated by a suppurative process. Akush. i gin. 33 no.4:114-115 Ji-Ag '57.
(MIRA 10:11)

1. Iz Instituta skusherstva i ginekologii (dir. L.G.Stepanov)
Ministerstva zdravookhraneniya RSFSR.

(GENITALIA, FEMALE, abnorm.

double uterus & double vagina with suppurative process,
surg.)

TSURKOVSKIY, Ya.I. [TSurkovskiy, Ya.I.]

Method for psychological investigation of athletes by means of the
controlograph. Nauk. zap. Nauk.-dosl. inst. psikhol. 11:204-208 '59.
(MIRA 13:11)

1. Gosudarstvennyy institut fizicheskoy kul'tury, L'vov.
(Sports--Psychological aspects)
(Physiological apparatus)

TSURNORECHKI, C. S.

4240

1/3

1. "The Possibilities of Changing the Activity of Condensation Reagents, G. L. KOSHEV and A. P. KOSHEV, Member of the Institute of Chemistry, Academy of Sciences of the USSR (Moscow), Chemical Abstracts 67:1077 (1967) or Chemical Abstracts 67:1077 (1967).
2. "Application of the Square Root Method to the Kinetic Analysis of the Reaction of A. V. KOSHEV and V. K. KOSHEV, Chemical Abstracts 67:1077 (1967).
3. "Generalization of the Square Root Method of Kinetic Analysis of the Reaction of A. V. KOSHEV and V. K. KOSHEV, Chemical Abstracts 67:1077 (1967).
4. "Determining the Rate of Reaction of A. V. KOSHEV and V. K. KOSHEV, Chemical Abstracts 67:1077 (1967).
5. "Differentiating Between the Number of Atoms in the Process of Hydrolysis and the Number of Atoms in the Process of Oxidation in Order to Establish the Mechanism of Ethyl Zinc and Chloride, A. V. KOSHEV and V. K. KOSHEV, Chemical Abstracts 67:1077 (1967).
6. "Quantitative Method of Estimating the Rate of Reaction of A. V. KOSHEV and V. K. KOSHEV, Chemical Abstracts 67:1077 (1967).
7. "The Kinetics of Hydrolysis of Ethyl Zinc in Aqueous Solution, A. V. KOSHEV and V. K. KOSHEV, Chemical Abstracts 67:1077 (1967).
8. "Electro-Catalysis of the Reaction of A. V. KOSHEV and V. K. KOSHEV, Chemical Abstracts 67:1077 (1967).
9. "Results of New Methods Designed to Produce Fertilizers with Decelerated Hydrolysis Rates, P. D. KOSHEV and V. K. KOSHEV, Chemical Abstracts 67:1077 (1967).

16

- Setia, Solomon and Uganda Abstracts, Vol. 1, No. 7, 1961
(Continued)
- C. St. MEMORANDUM of the Scientific Institute
of Chemistry and Physics (Moscow) Abstracts English
pp 711-714.
10. "Substance and Deficiency of the Earth Surface under
the Influence of Subsurface Processes", I. K. KOSCHIN,
pp 715-716.
 11. "Differential Functions in Plant Growth", N. N. KOSCHIN,
pp 715-716.
 12. "Association Phenomena in Neoplastic Activity",
I. K. KOSCHIN, pp 715-716.
 13. "The Interpretation of Antibodies and Interference in
Chickens Immunized with Brucella Antigen", S. K. KOSCHIN,
pp 715-716, and pp 715-716.
 14. "The Effect of Glutathione on Free Nitrogen in Free
Nitrogen in Case of Free Nitrogen and Free
Nitrogen", S. K. KOSCHIN and N. N. KOSCHIN, English
Summary, pp 715-716.
 15. "The Structure of the Lysozyme and Structure of
Large Protein", S. K. KOSCHIN, pp 715-716.
 16. "Electro-Physiology Study of the Electrostatic and
Electrostatic Effect of the Left Vagus", V. S. KOSCHIN,
pp 715-716.
 17. "Interference Pressure in Living Tissue",
I. K. KOSCHIN, pp English Summary, pp 715-716.
 18. "A Study of Subsistence Abstracts under Abstracts",
N. K. KOSCHIN and I. K. KOSCHIN, pp 715-716.

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— 3/3 —

KALAI VANOV, VI.; TSURNORECHKI, O.

Compatibility of the polyvinyl chloride and polyvinyl acetate in the presence of a third component. Godishnik khim tekhn 7 no.1/2:213-222 '60 [publ. '61].

TSURNUSHANOV, P.K.

Histochemistry of lipides in the interstitial cells of the
testicle of the human fetus. Izv Inst morf BAN 9/10:253-258
'64.

NOVIKOV, A.I., inzh.; TSURPAL, G.M., inzh.

New technical solutions in the design of deep mines in the Donets
Basin are reducing costs and time of their construction. Shakht.
strol. 9 no.10:1-5 0 '65. (MIRA 18:9)

1. Institut Dngipreshakht.

TSURPAL, G.M., inzh.; CHIKALOV, I.N., inzh.

Types of sectional prestressed reinforced-concrete linings
designed by the Stalino State Institute for the Design and
Planning of Mine Construction. Krepl. gor. vyr. ugol'. shakht
no. 1:141-152 '57. (MIRA 11:7)

1. Stalingiproshakht.
(Mine timbering)
(Reinforced concrete construction)

I 13902-66 EWT(m)/EMP(j)/ENP(z)/T/EMP(b)/ENA(d)/ENP(w)/ENP(t) LJP(c) EM/RM/JD/WW
 ACC NR: AP6002321 SOURCE CODE: UR/0373/65/000/006/0071/0076

AUTHOR: Tsurpal, I. A. (Kiev) 40

ORG: none B

TITLE: Stress concentration around a square hole in a physically nonlinear elastic plate 26

SOURCE: AN SSSR. Izvestiya. Mekhanika, no. 6, 1965, 71-76

TOPIC TAGS: stress concentration, nonlinear elasticity, nonlinearly elastic plate, square hole weakened plate, hole weakened plate

ABSTRACT: The derivation of nonlinear differential equations describing the elastic equilibrium of a thin plate whose material possesses nonlinear physical properties is based on the law of the nonlinear elasticity established experimentally by G. Kauderer for nonferrous metals and their alloys, high-strength steels, polymeric materials, etc. These equations contain the unknown displacement and stress functions, to the determination of which the stress-distribution problem is reduced. The stress field around a square hole in an infinite physically nonlinear isotropic plate subjected to omnidirectional uniform tension in infinity is determined by using the theory of conformal mapping. The formula for the stress-concentration factor is given and the calculated stress distribution around a square hole is shown in a diagram for various values of a parameter which determines the deviation of the nonlinear-elasticity law

Card 1/2

L 13902-66

ACC NR: AP6002321

from Hooke's law. Orig. art. has: 2 figures and 31 formulas.

SUB CODE: 20/ SUBM DATE: 27Apr64/ ORIG REF: 007/ OTH REF: 005/ ATD PRESS: 4/4/

[VK]

Card 2/2

ACC NR: AP6001247

(N)

SOURCE CODE: UR/0198/65/001/011/0140/0141

AUTHOR: Tsurpal, I. A.

ORG: none

TITLE: Second technical science conference on the structural mechanics of ships, held in the memory of Academician Yu. A. Shimanskiy (Leningrad, 18-19 June 1965)

SOURCE: Prikladnaya mekhanika, v. 1, no. 11, 1965, 140-141

TOPIC TAGS: ^{mechanical engineering} conference, ^{engineering} shipbuilding, ^{engineering} ship construction, structural mechanics, ~~marine engineering~~ ^{steel} mechanical property, shell structure, aerospace structure

ABSTRACT: A summary of the Second Technical Science Conference on Structural Mechanics is presented. The conference was held on 18-19 June 1965 in Leningrad. The work of the session was organized into four sections: 1) structural strength, plasticity, and creep, directed by V. S. Chuvikovskiy with alternate V. Ye. Spiro; 2) general questions of structural mechanics of ships, V. P. Belkin, director, and O. M. Paliy, alternate; 3) statics of plates and shells, I. S. Solomenko, director, and V. A. Postnov, alternate; 4) dynamics of ship construction, V. S. Kalinin, director, L. I. Slepnyan, alternate. Ten reports were presented by members of the Institute of Mechanics, AN UkrSSR. Authors of reports and the conference speakers from the Institute of Mechanics are listed along with the titles of their presentations. Nineteen papers were presented in the strength, plasticity, and creep

Card 1/2

L 13826-66

ACC NR: AP6001247

session; thirteen in the structural mechanics session; twenty in the statics session; and sixteen in the session on dynamics of ship construction. Mention is made of several topics of special interest to the conferees. The members noted a growing interest in the problems of ship construction, and plans were made for even closer contact and cooperation between groups and individuals in the fields of ship planning, design, and construction.

SUB CODE: 1320/SUBM DATE: none/

CC
Card 2/2

ACC NR: AP6002334 EWA(h)/ETC(m)-6
IJP(c) JD/WW/EM/RM SOURCE CODE: UR/0198/65/001/012/OK 15/0021

AUTHOR: Tsurpal, I. A. (Kiev); Shul'ga, N. A. (Kiev)

ORG: Institute of Mechanics, Academy of Sciences UkrSSR (Institut mekhaniki AN UkrSSR)

TITLE: Basic equations of the thin shallow shell theory with consideration of the physical nonlinearity

SOURCE: Prikladnaya mekhanika, v. 1, no. 12, 1965, 15-21

TOPIC TAGS: shallow shell, thin shallow shell, nonlinear shell theory, physically nonlinear shell

ABSTRACT: A basic system of equations for the theory of thin shallow shells is constructed assuming a nonlinear dependence between stresses and strains of the shell material. The linear equations of the Theory of Thin Shells developed by V. V. Novozhilov, and the nonlinear stress-strain relationships established in the Nonlinear Mechanics by G. Kauderer are used in constructing the above-mentioned basic system of equations, with the assumptions that the Kirchhoff-Love hypotheses are valid, that the displacements and strains in the shell are small and cause stresses which are within the elastic range of the shell material, such as nonlinearly elastic materials (plastics, high-strength steels, nonferrous metals and their alloys, and others). This system of nonlinear equations can also be used in investigating the shell behavior within the elastic-plastic stage of deformation. The system can be simplified

Card 1/2

L 14013-66
ACC NR: AP6002334

for particular cases of the state of the medium, e.g., a system of linear equations of the thin shallow shell theory is obtained for those media which obey Hooke's law. The authors intend to devote further publications to the integration of the proposed basic system of nonlinear equations, and to the solution of problems of stress concentration around holes in shells with the physical nonlinearity of the shell material taken into account. Orig. art. has: 1 figure and 34 formulas. [VK]

SUB CODE: 20/ SUBM DATE: 04Apr65/ ORIG REF: 003/ OTH REF: 003/ ATD PRESS:

4196

Card

2/2

TSURPAL, I.A.; KAYUK, Ya.P.; BUYVOL, V.N.

The second all-Union symposium on the propagation of electro-
plastic waves in continuous media. Prikl. mekh. 1 no.3:140-
141 '65. (MIRA 18:7)

TSURPAL, I.A.

Determining the Poisson bracket for physically nonlinear materials.
Zav. lab. 30 no.9:1126-1128 '64. (MIRA 1.8:3)

1. Institut mekhaniki AN UkrSSR.

I 8179-66 EWT(m)/EWP(w)/ EM

ACC NR: AP5026688

SOURCE CODE: UR/0258/65/005/005/0876/0882

AUTHOR: Babayev, M. A. (Kiev); Tsurpal, I. A. (Kiev)

ORG: None

TITLE: The plane homogeneous stress state in a physically nonlinear plate with a round opening

SOURCE: Inzhenernyy zhurnal, v. 5, no. 5, 1965, 876-882

TOPIC TAGS: elastic deformation, stress analysis, mathematic analysis

ABSTRACT: In certain synthetic materials - high strength steels, nonferrous metals, and their alloys - there is observed a nonlinear relationship between stresses and deformations even in regions of small deformations. The curve, slightly but perceptibly, deviates from the straight line given by Hooke's Law (See Fig. 1). Using a nonlinear law of elasticity, the article presents a mathematical solution to the problem of the stress concentration around a round opening in a plate, taking into account the small physical nonlinearity in a plane stress state extending to infinity. Calculation results are presented in figures and tables. These results demonstrate

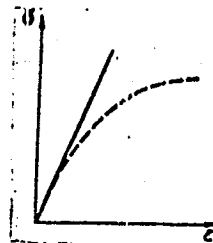


Fig.
1

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UDC: 624.073

L 8179-66

ACC NR: AP5026688

that the coefficient of the stress concentration for the given variant of the physically nonlinear theory decreases in comparison with the linear case, and depends in an essentially inverse manner on the elastic properties of the material and on the magnitude of external loading (nonlinear). Taking into account this type of physical nonlinearity leads to a more regular distribution of the stresses in the zone of stress concentration. Orig. art. has: 20 formulas, 3 figures, and 3 tables.

SUB CODE: ME/ SUBM DATE: 15Sep64/ ORIG REF: 006/ OTH REF: 001

nw

Card 2/2

TSURPAL, I.A.

Pure bend of a physically nonlinear strip (beam) with a reinforced circular hole. Dop. AN URSR no.7:856-860 '65. (MIRA 18:8)

1. Institut mekhaniki AN UkrSSR.

TSURPAL, I.A.

Physically nonlinear problems involving an elastic plate
with a reinforced circular opening. Dop. AN URSR no.3:
340-344 '64. (MIRA 17:5)

1. Institut mekhaniki AN UkrSSR. Predstavleno akademikom
AN UkrSSR G.N. Savinym [Savin, H.M.].

SHIBAYEV, N.K.; TSURPAL, I.A.

Dump trailer for DT-14 tractors. Trakt.1 sel'khozmasb. 30
no.2:37 F '60. (MIRA 13:5)

1. Melitopol'skiy institut mekhanizatsii sel'skogo khozyaystva.
(Dumping appliances)

TSURPAL, G.M., inzh.

Basic technical trends in planning stationary units for air
conditioning in deep mines. Trudy Sem.po gor.telplotekh
no.4:127-130 '62. (MIRA 15:8)

1. Donetskgiproshakht.
(Donets Basin--Mine ventilation)

TSURPAL, I.A. (Kiyev)

Pure bending of a strip weakened by a circular hole taking into consideration the physical nonlinearity. Prikl. mekh. 1 no.2: 92-98 '65. (MIRA 18:6)

1. Institut mekhaniki AN UkrSSR.

38143-15 SENT(M)/ENF(W)/RPP 231

ACCESSION NR: AP5001620

P/0033/64/016/004/1009/1011

AUTHOR: Guz', A. N. (Kiev); Savin, G. N. (Kiev); Tsurpal, I. A. (Kiev)

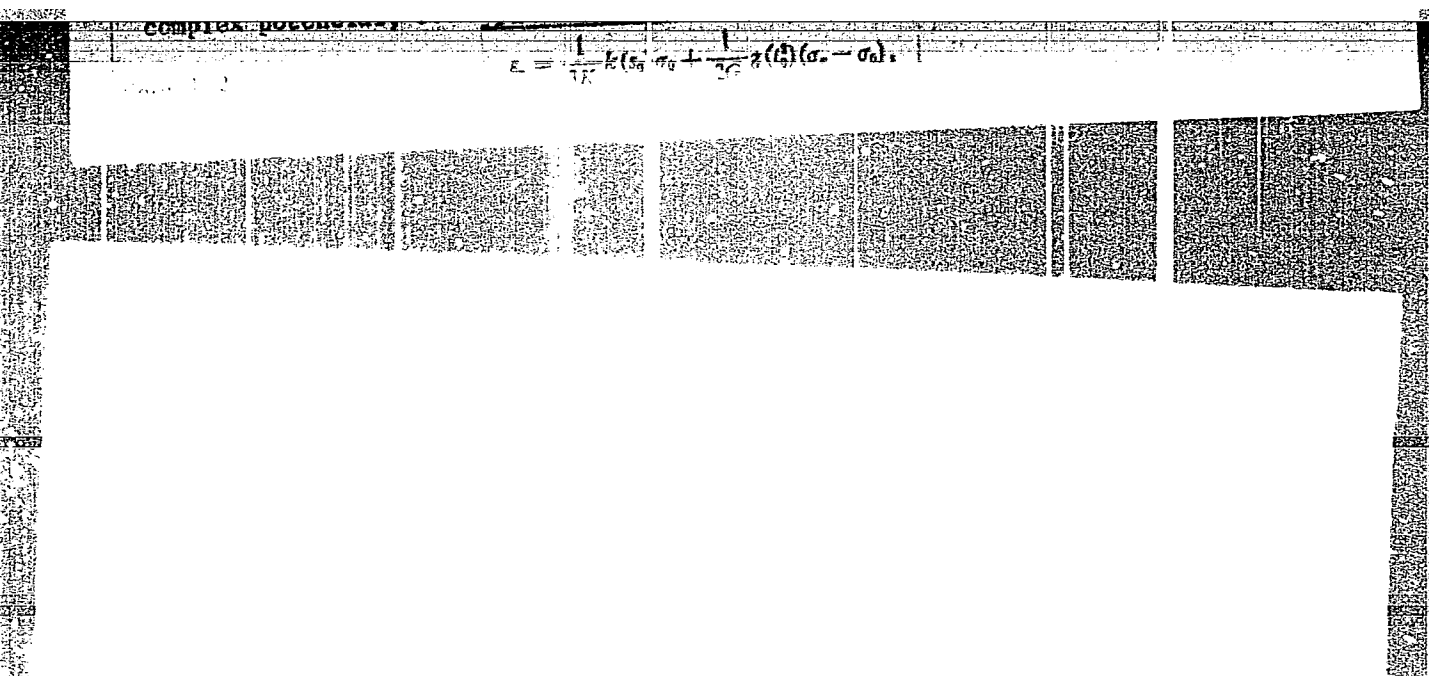
TITLE: Stress concentration around curvilinear openings in a physically nonlinear elastic plate

SOURCE: Archivum mechaniki stosowanej, v. 16, no. 4, 1964, 1009-1021

TOPIC TAGS: stress concentration, nonlinear elasticity theory, elliptical hole, nonlinear plate, elastic plate, stress-strain curve, conformal mapping

ABSTRACT: The stress concentration around curvilinear openings without edge points in a thin plate made of a material with a nonlinear stress-strain law is discussed. For the case of a single elliptical hole, the stress concentration factor is determined. For the case of a single elliptical hole, the stress concentration factor is determined.

ADDITIONAL NOTES: i.e., one considers a version of the physically nonlinear elasticity theory, having a very specific nonlinearity law. G. N. Savin (Prikl. Mech., 1, 1, 1974).



ASSOCIATION: Institut mekhaniki. Akademiya nauk Ukrainoskov SSR (Institute of Mechanics, Academy of Sciences of the Ukrainian SSR)

TSURPAL, I.A. (Kiyev)

Stress concentration around a circular hole in a physically nonlinear elastic plate in case of a pure shear. Prvkl.mekh. 8 no.4:372-378. '62. (MIRA 15:9)

1. Institut mekhaniki AN USSR.
(Elastic plates and shells)

TSURPAL, I.A. (Kiyev)

Experimental determination of elastic constants in the nonlinear
theory of elasticity. Prykl.mekh. 8 no.5:555-563 '62.
(MIRA 15:9)

1. Institut mekhaniki AN UkrSSR.
(Elasticity)

S/021/63/000/001/009/012
D251/D3Q8

AUTHOR: Tsurpal, I. A.

TITLE: Approximate solution of the problem of the elastic equilibrium of a physically nonlinear elastic plate with a reinforced circular hole

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 1, 1963, 44-49

TEXT: The author considers a circular hole, reinforced by a circular ring, in an unbounded elastic isotropic plate, the ring being of a different isotropic material. Using the law of elasticity proposed by H. Kauderer (Ing.-Arch., v. 17, 450, 1949) the author considers the case when the materials of the plate and ring are made of nonlinear materials. Using polar coordinates and the small parameter method, the differential equations

Card 1/3

S/021/63/000/001/009/012

$$\frac{1}{r} \frac{d}{dr} \left\{ r \frac{d}{dr} \left[\frac{1}{r} \frac{d}{dr} \left(r \cdot \frac{\partial F^{(1)}}{\partial r} \right) \right] \right\} + p^3 \beta_{-1}^2 \frac{R^4}{r^4} \left(\frac{4}{r^2} + 9 \beta_{-1} \frac{R^2}{r^4} \right) = 0 \quad (7)$$

and

$$\frac{1}{r} \frac{d}{dr} \left\{ r \frac{d}{dr} \left[\frac{1}{r} \frac{d}{dr} \left(r \frac{dF^{(1)}}{dr} \right) \right] \right\} + p^3 \beta_{-1}^2 \frac{R^4}{r^4} \left(\frac{4a_1}{r^2} + 9b_{-1} \frac{R^2}{r^4} \right) = 0 \quad (8)$$

are established for the plate and ring respectively. Here R is the radius of the ring, p is the external pressure applied at infinity (it is assumed that the stressed state is homogeneous to infinity), β_{-1} , a_1 , b_{-1} are constants to be evaluated from the boundary and coupling conditions, $F^{(1)}$ is taken from the second leading term in the small-parameter expansion for the stress function. The first term in this expansion is obtained from the equations of H. M. Savin. In conclusion, the cases of an absolutely rigid ring, an absolutely flexible ring, and a soldered-in elastic circular washer

Card 2/3

Approximate solution of ...

S/021/63/000/001/009/012
D251/D308

are considered. Some typical experimental data are cited. It is hence shown graphically that the effect of the physical nonlinearity is small when the ring is absolutely rigid, and in the case of a soldered-in washer, and, evidently, when there is no ring in the hole. There is 1 figure.

ASSOCIATION: Instytut mekhaniky AN URSR (Institute of Mechanics of the AS UkrSSR)

PRESENTED: by H. M. Savin, Academician

SUBMITTED: July 26, 1962

Card 3/3

S/879/62/000/000/032/088
D234/D308

AUTHOR: Tsurpal, I. A. (Kiev)

TITLE: Some plane problems of a physically nonlinear theory of elasticity

SOURCE: Teoriya plastin i obolochek; trudy II Vsesoyuznoy konferentsii, L'vov, 15-21 sentyabrya 1961 g. Kiev, Izd-vo AN USSR, 1962, 213-218

TEXT: The author solves the problem of an infinite plate with a circular hole, stretched in all directions, and Lamé problem, using Airy's stress function and the method of perturbations. For the first of the problems the stress concentration coefficient according to linear theory is 2 at the edge of the hole; in the nonlinear theory it is

$$\left(\frac{\sigma_{\varphi}}{p}\right)_{r=a} = 2(1 - 1.5\lambda p^2); \quad (16)$$

Card 1/2

Some plane problems ...

S/879/62/000/000/032/088
D234/D308

graphical comparison shows that the nonlinearity can decrease considerably the stress concentration near holes. There are 3 figures.

Card 2/2

S/198/62/008/002/010/011
D299/D301

24.4200

10.7000

AUTHOR:

Tsurpal, I.A. (Kyyiv)

TITLE:

Determining the stresses state of a thick-walled hollow cylinder with nonlinear stress-strain relation

PERIODICAL: Prykladna mekhanika, v. 8, no. 2, 1962, 215 .. 219

TEXT: The stress distribution in a hollow cylinder under uniform constant external- and internal loads, is considered; the stress-strain relation is nonlinear. The results of N. Kauderer (Ref. 1: Nichtlinear Mechanik, Berlin, Springer-Verlag, 1958 (translated into Russian)). The problem involves integration of a fourth-order differential equation with given boundary conditions. In solving the problem for a nonlinear elastic material, the author proceeds from the well-known solutions of linear theory. The compatibility equation contains only one parameter (λ) which characterizes the deviation from the linear law. Therefore the equation can be solved by the method of expansion in powers of a small parameter. The stress function in the zeroth approximation is

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$$F^{(0)} = \frac{r_1^2 r_2^2 (p_2 - p_1)}{r_2^2 - r_1^2} \ln r + \frac{1}{2} \frac{p_1 r_1^2 - p_2 r_2^2}{r_2^2 - r_1^2} r^2. \quad (7)$$

In the first approximation one obtains

$$F^{(1)} = \frac{1}{2} \frac{r_1^4 r_2^4}{(r_2^2 - r_1^2)^3} (p_2 - p_1)^2 \left\{ \frac{1}{r_1^2 r_2^2} \left[\frac{r_2^2 + r_1 r_2 + r_1^2}{r_2^2 - r_1^2} (p_2 - p_1) - \right. \right. \\ \left. \left. - (r_2^2 + r_1^2) (p_1 r_1^2 - p_2 r_2^2) \right] \ln r + \frac{1}{r_1^2 r_2^2} [(p_1 r_1^2 - p_2 r_2^2) - (r_2^2 + r_1^2) (p_2 - p_1)] r^2 - \right. \\ \left. - \frac{1}{2} (p_1 r_1^2 - p_2 r_2^2) \frac{1}{r^2} + \frac{1}{4} r_1^2 r_2^2 (p_2 - p_1) \frac{1}{r^4} \right\}. \quad (12)$$

After the stress functions for the zeroth- and first approximation have been determined, it is possible to find the stress distribution in the first approximation, account being taken of the mechanical properties of the material. The obtained formulas are used for calculating the stresses in a numerical example. For comparison, graphs are shown of the stress distribution according to linear and to nonlinear theory. From the calculations and the graphs it is evident that slight deviations from linearity may considerably

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reduce the stress peaks. There are 3 figures and 3 non-Soviet-bloc references (all of them in translations).

ASSOCIATION: Instytut mekhaniky AN URSR (Institute of Mechanics of the AS UkrRSR)

SUBMITTED: June 7, 1961

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TSURPAL, I.A. (Kiyev)

Approximate solution of physically nonlinear plane problems
of stress concentration around holes. Prykl. mekh. 9 no.6:
601-611 '63. (MIRA 16:12)

1. Institut mekhaniki AN UkrSSR.

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DISSEMINATION AND CONTROL

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ACCESSION NR: AP4020376

S/0021/64/000/003/0340/0344

AUTHOR: Tsurpal, I. A.

TITLE: Physically nonlinear stressed plate with a reinforced circular aperture

SOURCE: AN UkrRSR. Dopovidi, no. 3, 1964, 340-344

TOPIC TAGS: elasticity theory, nonlinear stress field, circular stress field, nonlinear elastic material, reinforced circular aperture, stress concentration coefficient, physically nonlinear elasticity theory, circular reinforcing ring

ABSTRACT: A formulation is given of physically nonlinear problems on the reinforcement of a circular hole of a physically nonlinear [in the elastic sense] plate by an arbitrary number of concentric elastic rings made of various non-linear [as above] materials with any stress field to infinity. The analogous problem for the case of linear materials had been worked out by G. M. Savin and N. P. Fleyshman [DAN UkSSR, 17 (1948)]. This work depends on the development and presentation of the basic equations of the stress distribution around

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apertures in physically nonlinear materials as presented in three earlier papers (G. M. Savin, *Prykladna mekhanika*, 9, 11 (1963); I. A. Tsurai, *Tr. Vsesoyuzn. konf., Izd-vo UkrSSR*, 213 (1962); I. A. Tsurai, *Prykladna mekhanika* 8, 372 (1962). The boundary value conditions and self-conjugate conditions are also formulated.

A solution is given of the problem of elastic equilibrium of a uniaxial elongated physically nonlinear plate with circular hole, with a linearly elastic ring soldered into it. Numerical values are presented for the stress concentration coefficient [Abstractor's note: symbol not explained in this paper, but appears to be the ratio of tangential stress, σ_{ϕ} , to pressure, p] for the case of a steel ring soldered into a copper plate. These results are given for three approximations: a completely flexible ring, a continuously stressed circular washer, and a completely rigid ring. Orig. art. has: 12 numbered equations.

ASSOCIATION: Instytut mekhaniky* AN UkrSSR (Institute of Mechanics AN UkrSSR)

SUBMITTED: 18Mar63

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ENCL: 00

SUB CODE: AP

NO REF SOV: 005

OTHER: 001

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TSURPAL, I.A. (Kiyev); SHUL'GA, N.A. (Kiyev)

Basic problems of the theory of thin shallow shells considering
the physical nonlinearity. Prikl. mekh. 1 no.12:15-21 '65.

(MIRA 19:1)

1. Institut mekhaniki AN UkrSSR. Submitted April 4, 1965.

TSURPAL, I.A. (Kiyev)

Stress concentration around a square hole in a physically
nonlinear elastic plate. Izv. AN SSSR. Mekh. no.6:71-76
N-D '65. (MIRA 18:12)

SHIBAYEV, N.K. [Shybaiev, N.K.]; TSURPAL, I.A.

Dump trailer for DT-14 tractors. Mekh.sil'.hosp. 11 no.2:
10-11 F '60. (MIRA 13:6)
(Dump trucks)

TSURPAL, I.A. (Kiyev)

Determining the stressed state of a thin-walled hollow cylinder
under conditions of the nonlinear law of elasticity. *Prykl.*
mekh. 8 no.2:215-219 '62. (MIRA 15:3)

1. Institut mekhaniki AN USSR.
(Cylinders)

CA TSURSKIY, A.Ya

Experiments in organizing major repairs on the tower
sulfuric acid system. A. Ya. Tsur'skiy. J. Chem. Ind.
(U. S. S. R.) 17, No. 4-6, 77-81 (1940). Simplification
in methods of repair are described. H. M. L.

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ASH-11A METALLURGICAL LITERATURE CLASSIFICATION

TSURTSILINA G.A.
TSURTSILINA, G.A.

Conference of midwives employed by the Kalinin railroad. Fel'd.
1 akush. no.8:62-63 Ag '55. (MLRA 8:10)

1. Nachal'nik akushersko-ginekologicheskogo otdeleniya Dorozhnoy
bol'nitsy stantsii Smolensk.
(MIDWIVES)

TSURTSUMIYA, A.

New group of key personnel. Za obor. 23 no.14:3-4 D '47.
(MIRA 13:3)

1. Predsedatel' Kutaissskogo gorsoвета Osoaviakhima Gruzinskoy SSR.
(Georgia--Military education)

TSURTSUMIYA G.M. 3.11

TSURTSUMIYA, G.M.; ZUBADZE, Sh.A.

Lymphatic reaction in scarlet fever. *Pediatrics* 40 no.1:70-72
Ja '57. (MIRA 10:10)

1. Iz 1-y Tbilisekey detskey infektsionnoy bol'nitsy (glavnyy vrach
D.Yu.Yashvili, nauchnyy rukovoditel' - zav. infektsionnoy kafedroy
pediatricheskogo fakul'teta Tbiliskogo meditsinskogo instituta
prof. V.A.Nemsadze)
(SCARLET FEVER) (LYMPHATICS)

TSURUL', A. (s.Borodyanka, Kiyevskoy obl.)

Stand for a soldering iron. Radio no.8:26 Ag '61. (MIRA 14:10)
(Solder and soldering--Equipment and supplies)